

Harshit Kumar

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Summary

Backend engineer with hands-on experience spanning **fintech payments and lending ledgers**, distributed systems, and GPU/HPC research. At Oro, I build and optimize production financial infrastructure: serverless compounding pipelines, ledger correctness, cross-system reconciliation, and secure authentication across a multi-service, multi-tenant environment. I own features end-to-end, from database schema to API, and am equally comfortable debugging money-movement correctness or cutting latency out of hot paths.

Education

Dhirubhai Ambani University

B.Tech in Information and Communication Technology

2022 – 2026

Gandhinagar, Gujarat

Experience

Oro Corp

Backend Engineer

Dec 2025 – Present

GIFT City, Gujarat

- Re-architected a monolithic cron-based loan compounding job into a **serverless, event-driven pipeline** using AWS Lambda, reducing execution time from **5.5 hours to 6 minutes (>50× speedup)** by parallelizing computations across distributed workers. Designed a scalable processing architecture for **80K+ daily loans** using batch chunking, event-driven triggers, and idempotent execution to ensure consistency and safe retries under high load.
- Implemented **failure handling with automatic retries and dead-letter queues (DLQ)**, eliminating single-point failures in the legacy cron system and improving fault tolerance and observability. Reduced infrastructure cost to approximately **\$0.01/day** by migrating from long-running compute to a serverless, pay-per-execution model while maintaining high throughput.
- Hardened web-client **authentication and session security** by implementing **httpOnly cookie-based auth transport, CSRF protection middleware** (double-submit + HMAC-bound tokens), and server-side logout endpoints, remediating multiple findings from a third-party security audit with zero disruption to existing mobile clients.
- Shipped an **end-to-end customer-engagement feature** spanning **4 microservices** (ledger, notifications, campaign, loan-management), delivering targeted WhatsApp and push nudges to eligible customers during gold-price volatility to proactively reduce loan margin-call risk.
- Architected and shipped a gold-valuation microservice module with RBAC-scoped APIs, S3-backed image ingestion, and an idempotent appraisal-finalize state machine supporting optional loan linkage, serving both admin and field-agent clients across a multi-tenant (Oro/Tenmark) environment.
- Drove an **org-wide dependency-security remediation across 20+ Node.js services**, patching critical and high-severity vulnerabilities, syncing lockfiles, and standardizing CI pipelines.

Dhirubhai Ambani University

Research Intern

May 2025 – July 2025

Gandhinagar, Gujarat

- Engineered SYCL-based interpolation kernels for scattered point-to-mesh mapping, leveraging novel strategies like divide mapping and private mesh to minimize atomic contention and achieve up to **40× GPU speedup** and **3× CPU speedup** over serial implementations.
- Benchmarked and evaluated advanced spatial data structures (e.g., Hash Map, Quad Tree, Fenwick Tree, Segment Tree) for GPU and CPU architectures to enhance memory access patterns, reduce contention, and support scalable, high-throughput 2D mesh interpolation in heterogeneous environments.

Institute for Plasma Research

Project Intern

Jun 2024 – July 2024

Ahmedabad, Gujarat

- Engineered a cross-platform Flutter-based mobile application for internal deployment, designed for isolated network environments with no dependency on external internet connectivity.
- Architected and deployed a RESTful API backend using Node.js and Express, hosted on a LAN-restricted offline server within the institute's secured network.

Projects

Blogging Website | [Next.js](#), [Firebase](#), [EmailJS](#), [Tailwind CSS](#), [Jest](#)



- Built a full-featured blogging website with support for user auth, blog creation/editing, and real-time updates using Next.js and Firebase.
- Integrated EmailJS to send dynamic emails for post interactions and user notifications.

- Applied software engineering principles including modular design, version control, and testing to ensure quality and maintainability.

AeroTriage: AI-Powered Medical Triage System | FastAPI, Redis, SQLite, RAG, Twilio WhatsApp



- Built an offline-first AI triage system that processes free-text symptoms, assigns severity scores, and estimates patient wait times.
- Designed a **Retrieval-Augmented Generation (RAG)** pipeline for consistent and explainable symptom-to-condition mapping.
- Implemented a queueing system with **explicit user confirmation via WhatsApp (Twilio)** before appointment creation.
- Optimized real-time performance using Redis caching and lightweight SQLite storage for low-latency, reliable operation.
- Engineered modular FastAPI services with clear separation of inference, queue management, and communication layers.

Technical Skills

Languages: C, C++, JavaScript, SQL, HTML, CSS, Python.

Developer Tools: Cluade, Cursor, Git, GitHub, Postman, VS Code, Figma, Flutter, Android Studio, pgAdmin.

Frameworks/Libraries: React.js, Next.js, Node.js, Express.js, Tailwind CSS, FastAPI.

Cloud/Databases: AWS (Lambda, Step Functions, SQS), MongoDB, MySQL, PostgreSQL, Firebase, SQLite, Redis.

Technologies: REST APIs, Serverless & Event-Driven Architecture, JWT & Cookie Authentication, RAG (Retrieval-Augmented Generation), WebSockets, Microservices Architecture.

Soft Skills: Team Collaboration, Leadership, Problem Solving, Communication, Time Management.

Coursework: Data Structures and Algorithms, Design and Analysis of Algorithms, Database Management Systems, Computer Networks, Models of Computation.

Areas of Interest: Backend Development, Web Development, Distributed Systems, Machine Learning.

Position Of Responsibility

Team Lead

March 2023 – January 2024

Led a team across a 2-semester college project, recognized among the best projects of our batch

- Led a team of developers to build an Automated Plant Watering System, coordinating design, development, and delivery.

Achievements

- Stanford Certificate: **Supervised Machine Learning** – Regression and Classification
- Stanford Certificate: **Advanced Learning Algorithms**
- Achieved **All India Rank 8300** in JEE Mains 2022 (among 1M+ candidates)